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| AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT | | 1. CONTRACT ID CODE | PAGE 1 OF 3 |
| 2. AMENDMENT/MODIFICATION NO. 0001 | 3. EFFECTIVE DATE Nov 8, 2007 | 4. REQUISITION/PURCHASE REQ. NO. | 5. PROJECT NO. (If applicable) |
| 6. ISSUED BY NASA/Stennis Space Center Acquisition Management Office Program Management Support Division Building 1100 Room 251H Stennis Space Center, MS 39529-6000 | CODE | 7. ADMINISTERED BY (If other than Item 6) Same as block #6 | CODE |
| 8. NAME AND ADDRESS OF CONTRACTOR (No. Street, county, State and ZIP Code) | | <input type="checkbox"/> | 9A. AMENDMENT OF SOLICITATION NO. NNS08221455R |
| | | <input checked="" type="checkbox"/> | 9B. DATED (SEE ITEM 11) Oct 16, 2007 |
| | | | 10A. MODIFICATION OF CONTRACT/ORDER NO. |
| | | | 10B. DATED (SEE ITEM 13) |
| CODE | | FACILITY CODE | |

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning one (1) copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATA SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and data specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

N/A

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

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| <input type="checkbox"/> | A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. |
| <input type="checkbox"/> | B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b). |
| <input type="checkbox"/> | C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: |
| <input type="checkbox"/> | D. OTHER Specify type of modification and authority) |

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

Solicitation No. NNS08221455R for Cryogenic and Isopropyl Alcohol Butterfly Valves for the A-3 Altitude Test Stand at NASA Stennis Space Center, is hereby changed as follows – See attached pages 2 and 3.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

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|---|------------------|--|------------------|
| 15A. NAME AND TITLE OF SIGNER (Type or print) | | 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) | |
| 15B. CONTRACTOR/OFFEROR | 15C. DATE SIGNED | 16B. UNITED STATES OF AMERICA | 16C. DATE SIGNED |
| (Signature of person authorized to sign) | | BY (Signature of Contracting Officer) | |

- a. The attached questions and answers are hereby incorporated into the subject solicitation.

Questions: Butterfly Valves

QUESTION: Seat Material: Kel-F or similar material: Teflon is not listed. Would Teflon be acceptable? For these applications, Teflon will provide a tighter Reverse direction sealing.

ANS: Virgin PTFE (Teflon) seats will be accepted provided that they are not laminated with steel backing rings or other PTFE layers, are retained in the valve in such a manner as to prevent extrusion, are retained in such a manner that the seat is maintained in the valve under flow conditions, and are designed in such a way as to ensure proper and repetitive sealing.

QUESTION: Internal Leak Test: The same acceptable leakage rate is quoted for the preferred sealing direction and the reverse sealing direction. This can be difficult and many industries accept a higher leak rate in the reverse (non-preferred) direction. Would a Class VI leakage in the preferred sealing direction and a Class IV in the reverse be acceptable with Kel-F(PCTFE) seat?

ANS: Unlike with other industries, a higher leak rate in the reverse direction is not acceptable. Please test the valve according to the specification and confirm that the valves can meet stated leakage requirements. Leakage requirements are not arrived at lightly and should be met exactly or exceeded.

QUESTION: Class VI shutoff/sealing in both directions can be accomplished with Teflon seats. Will Teflon seats be acceptable?

ANS: This has been discussed above.

QUESTION: Solenoid Valve 350 PSIG rated: This is a fairly high pressure rating for industrial standard valve actuation solenoid valves, does Stennis have a preferred valve actuation solenoid valve that meets this spec.? Can you tell us the manufacturer and model/series of the solenoid valve? Or would a lower rated solenoid valve be acceptable?

ANS: The valves covered by this specification are not industrial standard and therefore have more stringent requirements. The specification should be followed exactly regarding solenoid valves. ASCO is one of many known manufacturers of acceptable solenoid valves.

QUESTION: Two Limit Switches: Most limit switch assemblies/boxes for quarter turn actuators are housed in Aluminum housings. Since aluminum actuators are not allowed, are aluminum housed limit switches allowed? If so, is the limit switch manufacturer's standard paint/coating acceptable? Is there a preferred Limit Switch manufacturer?

ANS: Limit switches that are housed in aluminum are acceptable as are those with painted housings. GO Switch is a known manufacturer of this type of limit switch, or it could be any other approved equal.

Question Specific to LOX Valves

QUESTION: "All Teflon parts must.....100% virgin Teflon and lot/batch certificates...traceability." The "batch" mentioned above from the specification doesn't mean Batch Impact testing, does it? It is my understanding that Polytetrafluoroethylene (Virgin PTFE) is exempt from Impact "BATCH TEST REQUIREMENTS" per SSC DWG NO. 54000-GM30. Am I correct?

ANS: SSC DWG NO. 54000-GM30 (attached as Appendix A2 in specification) is very clear concerning which materials intended for which pressures of oxygen are acceptable with traceability only and which must be batch tested. Lot/Batch traceability certificates are required to ensure that the components are indeed made from this material and can be proven as such. For example, Sheet 7 of SSC DWG NO. 54000-GM30 shows plainly that Virgin PTFE has an "A" rating when used in oxygen at pressures less than or equal to 6,700 psig.

Question Specific to Vacuum Jacketed Valves: LOX & LH

QUESTION: Could a sketch of the how you want the Vacuum Jacket configured be provided? The description in the specification is not clear.

ANS: The description in the specification of the vacuum jacket requirements gives dimensions of OD, ID, and thickness. It also details the spacing of the bolt holes, the diameter of the bolts, and the finish of the flange surface. This description has been provided verbatim on procurements in the past without any issue or difficulty. There is enough clearly presented information provided in the specification for manufacture of the vacuum jacket.

Commercial Question:

QUESTION: Are progress payments allowed for in this procurement?

ANS: Milestone payments are authorized for this procurement. See Solicitation Page 16 of 22, Addendum to Contract Clause 52.212-4 (i)(1).

- b. The date for receipt of proposals remains the same at Nov 27, 2007, 3:00 PM Local Time.
- c. All other terms and conditions remain unchanged.